Letters to the Editor

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ANALYSIS OF GAMMA-RAY SPECTRUM OF RADIOACTIVE FALLOUT OVER CALCUTTA

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(*Received February* 25, 1964)

Systematic record of the intensity of β and γ rays emitted by precipitated samples of radioactive fallout has been maintained in our laboratory for over a couple of years. However, with the advent of the current monsoon season in May 1963, it was soon evident that the specific intensity of the rainborne radionuclides had increased considerably above the average value. Since the estimation of spectra necessitated somewhat more intense sources, the collected samples were grouped into fortnightly batches and assayed by direct measurement using a sodium iodide gamma scintillation spectrometer with a single-channel pulse height analyser (Type Philips P. W. 4082). The system was carefully calibrated with standard sources in a form simulating the samples to be assayed. Final measurements were, however, made with a NaI ($3'' \times 3''$ bore hole) detector in conjunction with a Victoreen 800 channel Pulse-height analyser at the "Institut für Radiochemie en der Technischen Hockschule, München."

Fig. 1 shows the corrected γ-ray energy spectrum (range 0–2 Mev.), of a batch collected over a period of increased activity from June 1st to June 15, 1963, which was obtained after subtracting the background spectrum from the experimental curve. The radio-isotopes identified from the spectrum have been classified in Table A, in the order of increasing γ-energy.

Most of the radionuclides shown in Table A, have also been detected elsewhere by other groups of workers. For example, the Royal Cancer Hospital group

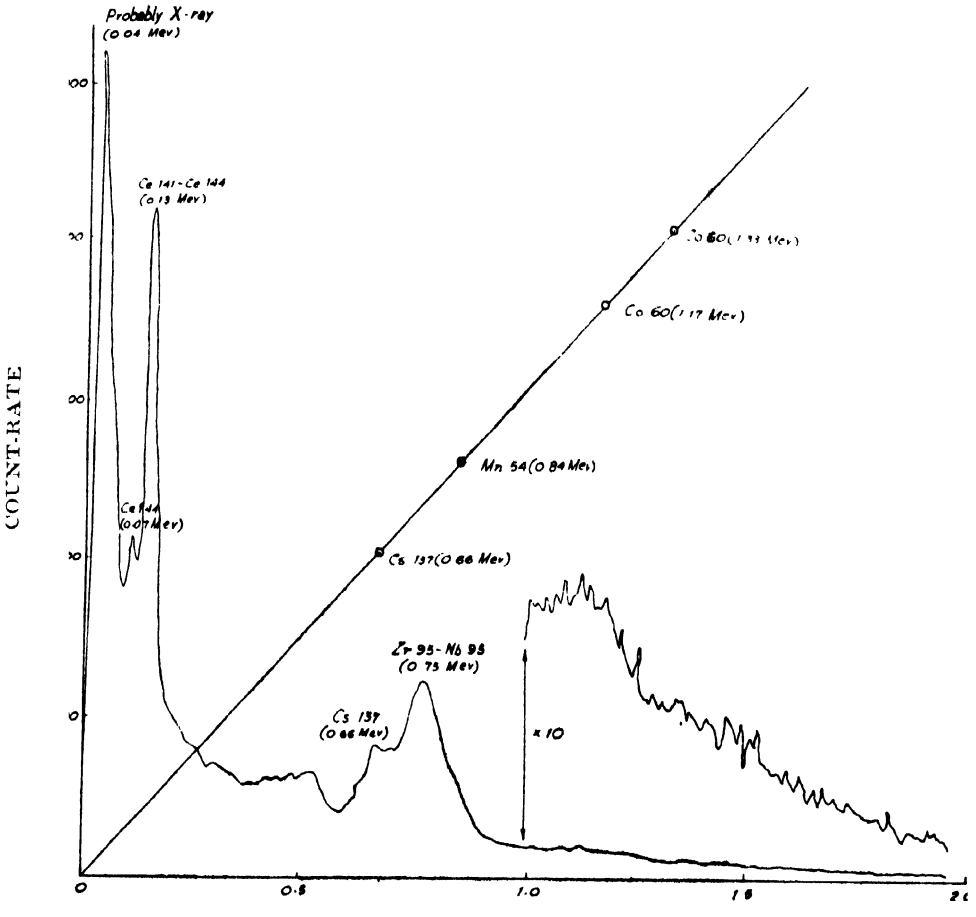

Fig. 1.

(Mayneord *et al.*, 1958, Anderson *et al.*, 1959, Anderson *et al.*, 1960) measuring radioactive fallout in London for a number of years, detected Cs-137, Ce-144, Zr-95, Nb-95, along with I-131, Ba-137m, Rh-106, Ru-103, Ba-140, La-140, and Pr-143. Working in Sweden, Aler *et al.*, (1956) detected the presence of Ce-141, Ce-144, Zr-95, Nb-95, Cs-137, and Ru-103. Vohra *et al.*, (1961) had also analysed the spectra of radioactive fallout at Bombay in 1960 after the French atomic test in Sahara and detected Ba-140, La-140, Zr-95, Nb95, Tc-99m, Ce-141, and Te-132.

TABLE A

Isotope	Energy (Mev)	Half-life
Ce-144	0.07	284d
Ce-141	0.13	30d
Ce-144	0.13	284d
Cs-137	0.66	30y
Zr-95	0.75	65d
Nb-95	0.75	35d

A fuller account of these measurements would be published elsewhere.

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